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SUPPLEMENTARY NOTES ON THE FAMILY ANTHOMYIIDAE OF JAPAN (DIPTERA), V

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Abstract

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Thirteen Japanese species of Anthomyiidae are dealt with. Of them two species, *Botanophila cylindrica* and *Botanophila kitadakeana,* are described as new to science. Five others, *Botanophila rotundivalva* (Ringdahl), *Delia dovreensis* Ringdahl, *Alliopsis conifrons* (Zetterstedt), *Heterostylodes pilifera* (Zetterstedt) and *Paregle atrisquama* (Ringdahl), are recorded from Japan for the first time. The genus *Heterostylodes* is also new to Japan. Some additional data are given on *Botanophila betarum* (Lintner) (= *B. macra* (Karl)), *B. fugax* (Meigen), *B. hucketti* (Ringdahl), *B. dissecta* (Meigen), *B. lobata* (Collin) and *Delia fabricii* (Holmgren).

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INTRODUCTION

The Anthomyiidae are mostly inhabitants of cool-climatic areas, represented by about 900 species in the Palaearctic region. In Japan, have been known 209 species, of which nearly 60 % are common to Europe and about 35 % to N. America. Most of the species common to N. America are also found in Europe. In this paper seven species are added to the Japanese fauna, of them two are new to science, two others are common to Europe, and the remaining three common to Europe and N. America. The genus *Heterostylodes* is here also recorded as new to Japan. On this occasion, some additional collecting data are given on six other species little known from Japan.

In the following lines, the term orbits is applied to the areas including the parafrontals and parafacials, and the orbital width is measured at the widest part, namely at the parafrontal angle. The postocular disks mean the upper areas of occiput outside the median occipital sclerite. The term genal setae is here restricted in use to the more or less upwardly curved setae between the peristomal setae and the posterior strong genal setae.

The specimens used here were all collected by myself unless otherwise stated, and are preserved in the collection of Laboratory of Systematic Entomology, Hokkaido University.

Before going further I wish to express my sincere thanks to Dr. S. Shinonaga, Tokyo Medical and Dental University, for giving me a chance to examine a specimen of *Alliopsis conifrons*.

DESCRIPTIONS

1. *Botanophila cylindrica* sp. nov.
(Figs. 1-6)

Type material. Honshu. Nagano-ken: Inago-yu - Midori-ike, 1500-2000 m, Mt. Yatsugatake, 2 ♂, 1 ♀, 25. vi. 1989; Midori-ike, 2000-2100 m, Mt. Yatsugatake, 1 ♂ (holotype), 25. vi. 1989; Midori-ike - Honzawa onsen, 2100-2200 m, Mt. Yatsugatake, 1 ♀, 26. vi. 1989. Yamanashi-ken: Hirogawara - Shirane-oike, 1500-2000 m, Mt. Kitadake, 2 ♀, 4-8. vii. 1989; Shirane-oike, 2000-2200 m, Mt. Kitadake, 1 ♀, 4-8. vii. 1989.

♂. Wing-length 6.9-7.0 mm. Body including appendages blackish in ground colour. Interfrontalia whitish grey pollinose, darkened on upper area; parafacials whitish or silvery grey pollinose, with or without a faint yellowish tinge; cheeks slightly to rather distinctly tinged with yellow in pollinosity. Thorax densely pale grey to dull grey pollinose; mesonotum barely to distinctly tinged with brown in pollinosity, in frontal angle of view with blackish markings visible: small patches around *prst,* broad patches on lateral declivities behind suture, and rather large patches between rows of *dc* and *acr* behind suture posteriorly, the last ones broadening caudad to extend beyond the rows; in caudal angle of view darkened medially along rows of *acr* and laterally outside rows of *dc* or of *ia*. Abdomen densely pale grey pollinose, more or less tinged with brown; median vitta sharp and rather narrow, on 2 nd tergite about as wide as tibial diameter; fore-margianl bands also sharp and about as wide as median vitta; pregenital sclerite polished anteriorly.

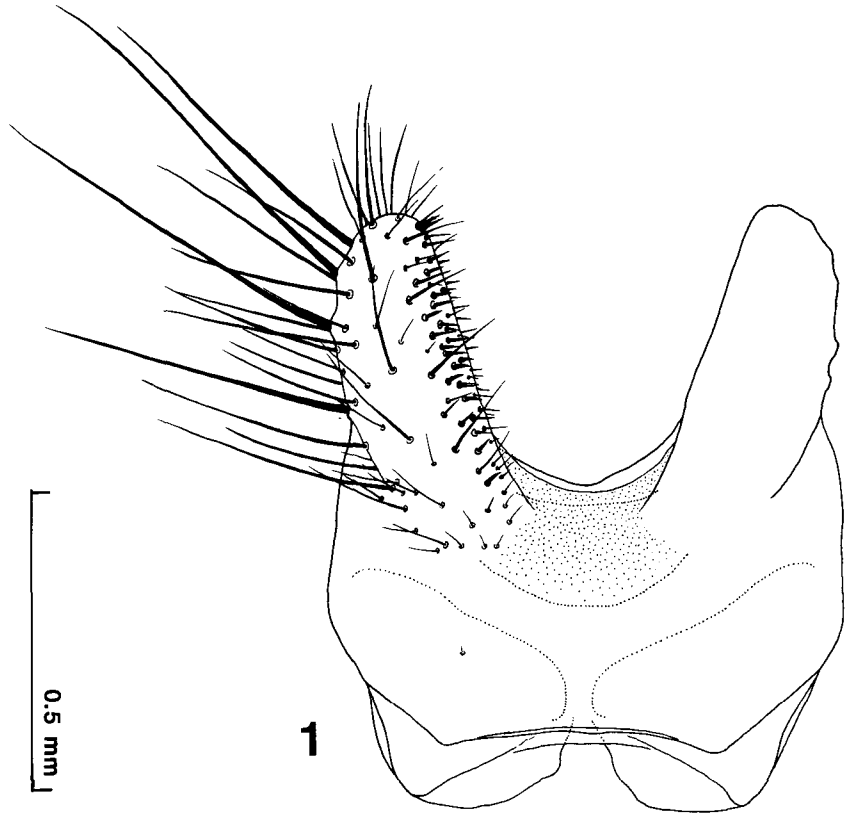
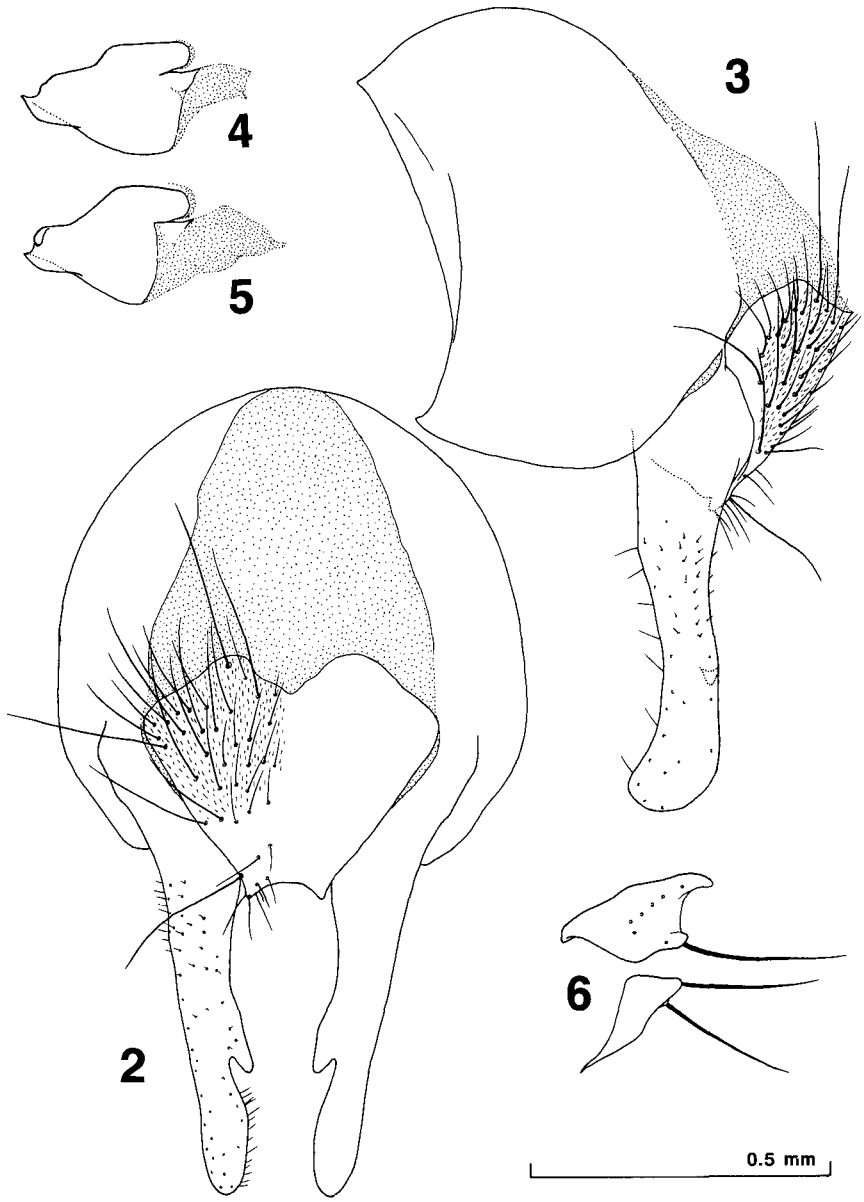


Fig. 1. *Botanophila cylindrica* sp. nov., ♂, 5th sternite. Holotype from Midori-ike.

Wings tinged with brownish yellow, strongly yellowish basally; calyptrae strongly tinged with yellow.

Head 1.24-1.26 times as high as long; frons distinctly wider than (1.5-2.5 times as wide as) anterior ocellus; interfrontalia 0.8-1.4 times as wide as anterior ocellus, with *if* well developed and strong, and with some minute setulae scattered, in 1 paratype with an additional pair of setae discernible above the ordinary *if*; parafrontals with 5-7 *ori* (2-4 strong) and additionally with 1 or a few fine or minute setulae; A_3 2.2-2.3 times as long as wide; arista minutely pubescent, longest hairs shorter than basal diameter of arista; orbits about 1.5 times as wide as A_3; cheeks a little higher than orbital width and 0.25-0.29 times as high as eye, with some genal setae in about 2 rows; epistoma situated behind frons at lunule; palpi a little shorter than or as long as A_2 and A_3 combined; haustellar mentum a little shorter than or as long as palpi; occiput setulose on postocular disks.

Mesonotum with about 7 pairs of short and fine *pre-acr* in approximate rows and with some setulae in between, distance between the rows being about half as long as that to adjacent *dc*-row; posthumeral area behind anterior *ph* with no strong setae, at most 1 or 2 weak setulae distinguishable from ground setulae; *pra* well



Figs. 2-6. *Botanophila cylindrica* sp. nov., ♂. 2, hypopygium, dorsal view; 3, ditto, lateral view; 4-5, basiphallus and distiphallus; 6, pregonite and postgonite. Holotype from Midori-ike (Figs. 2-4, 6) and paratype from Inago-yu - Midori-ike (Fig. 5).

developed, longer than anterior *ntpl*; mesopleuron with 1 strong and 0-1 weak anterior *mpl*, and with 1 strong and 1 much weaker *pstg* and a few or some associated setulae; *stpl* 1 : 2, below the anterior with 1 weak seta distinguished from adjacent setulae and below the posteriors with 0-1 rather strong and 1 weak seta differentiated; scutellum setulose on dorsal surface laterally, a setula outside the basal seta being rather well developed.

Abdomen cylindrical, somewhat depressed on basal half, 2.4-2.6 times as long as wide; 6th tergite bare, only in 1 paratype with 2 setulae visible; 5th sternite with fleshy processes; epandrium large, forming a deep indent together with pregenital sclerite; terminalia as in Figs. 1-6.

Mid femur with a complete row of short *av* and a complete row of longer *pv*, most of the *pv* on basal two-thirds being much longer than the femur-height, the longest one about 1.5 times as long as the height, the *pv* on distal third being short, at most as long as the height; f_3 with a row of *av* and a row of *pv*, the longest *pv* situated near basal third of the femur and 1.7-2 times as long as the femur-height, some *pv* around apical third weaker than adjacent ones and shorter than the height; t_1 with 1 distinct and 0-1 weaker *ad* and 1 *pv*, and with apical *ad* and *pv* distinct though shorter than apical *d*; t_2 with 1 distinct and 0-1 weaker *ad*, 3 *pd* and 2 *pv*; t_3 with 3 (4 on left tibia in holotype) *av*, 4 *ad*, 3 (4 on left tibia in a paratype) *pd* and 1-2 *pv*, and with apical *pv* developed though variable in length from shorter to longer than subbasal ventral seta of the first tarsomere. Wings with costal thorns a little to rather distinctly stronger than costal spicules; costa setulose on ventral surface near lower row of costal spicules; *dm-cu* oblique and a little sinuate.

♀. Wing-length 7-7.4 mm. Head brownish in ground colour on frons (at least on lower half), parafacials and cheeks; orbits and cheeks with pollinosity more yellowish than in male. Mesonotum in frontal angle of view with dark vittae along rows of *post-dc* instead of the patches seen in male. Abdominal 6th and 7th tergites with hind marginal areas usually visible in dried specimens and shining black there; proctiger (supra-anal sclerite, subanal sclerite and cerci) shining black.

Frons about 0.4 times as wide as head; interfrontalia 0.5-0.6 times as wide as frons; 3-5 *ori* (of them 2-4 strong) present, mingled with a few or some minute setulae; 3 *ors* usually present, though the uppermost one often suppressed; A_3 1.9-2.2 times as long as wide; orbits 1.6-1.8 times as wide as A_3; cheeks as high as or a little higher than orbital width, and about third (0.33-0.39 times) as high as eye, with 1 strong and a few or some weak or fine genal setae usually arranged in a row.

Mesonotum with ground setulae shorter than in male; *acr* all weak like as ground setulae except for strong prescutellar pair; *stpl* 1 : 2, below the anterior with a fine seta usually distinguishable from adjacent setulae and below the posteriors with 0-1 fine seta differentiated; scutellum with basal setulae weaker than in male. Abdomen with cerci long and free from supra-anal sclerite.

Femora with setae fewer and weaker than in male; f_2 with no distinct *av* and with 3 *pv* in basal half and 1 or a few *pv* near apex; f_3 with 5-7 *av* except near base, and with 2-3 *pv* in basal half and 1 or a few *pv* near apex; t_1 with 2 *ad*, 0-1 *p* and 1-2 *pv*, and with apical *ad* as long as or a little longer than apical *d*, apical *pv* a little shorter to a little longer than apical *d*, and apical *p* more or less developed; t_2 with 0-1 *av*, 2 *ad*, 2-3 *pd* and 2 *pv*; t_3 with 2-4 (usually 3) *av*, 4 *ad*, 3 *pd* and usually no *pv* (a few weak *pv* discernible in 1 specimen). Wings with *dm-cu* less oblique than in

male.

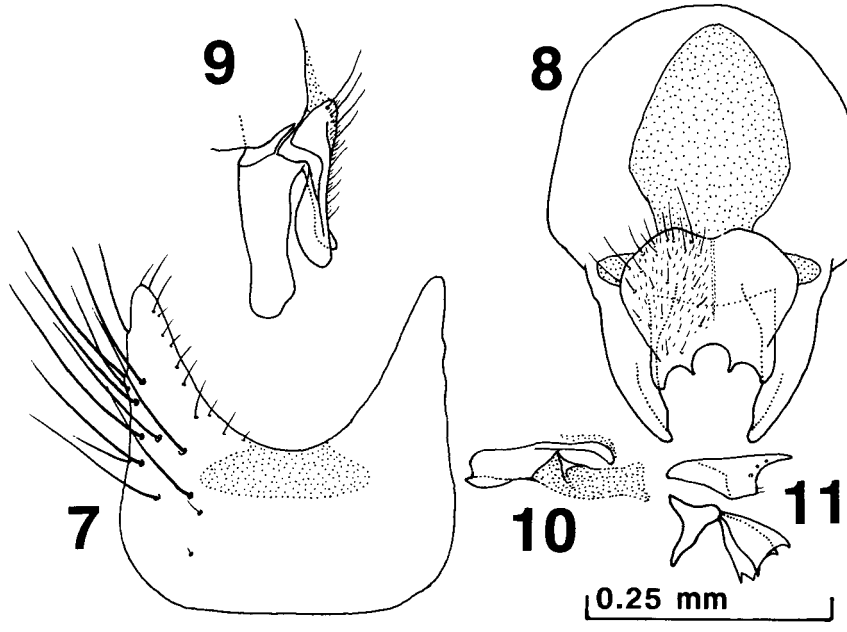
Remarks. The genus *Botanophila* is here recognized as a large group including *Pegohylemyia* Schnable formerly accepted as distinct. In having the rather large and stout body, the fleshy and spinose processes of the male 5th sternite and the well developed apical *pv* on the hind tibia, *B. cylindrica* is similar to certain species of *Botanophila* (s. str.), from which it is, however, different in the male terminalia: 6th tergite bare or almost bare and cercal plate not prolonged or pointed posteriorly. At a glance, due to the large and stout body, this species also resembles *B. himalaica* (Suwa, 1977), belonging to *Pegohylemyia* according to the previous concept, known from Nepal and China, from which it is, however, much different in the following aspects: mesonotum with *pre-acr* present; hind tibia with apical *pv* developed; male 6th tergite bare or nearly so; surstyli with an inside process. For the present it is uncertain which is most related to *B. cylindrica* in the genus.

2. *Botanophila kitadakeana* sp. nov.
(Figs. 7-14)

Type material. Honshu. Yamanashi-ken: Mt. Kitadake, alt. 2800-3190 m, 3♂ (one the holotype), 6♀, 5-7. vii. 1989.

♂. Wing-length 3.1-3.3 mm. Body mainly blackish in ground colour, and pale grey and slightly brownish in pollinosity; legs dark brownish. Interfrontalia, orbits and cheeks brownish and partly darkened in ground colour, and whitish grey in pollinosity, shining on orbits; antennae and palpi blackish; haustellar mentum blackish and polished. Mesonotum rather thinly pollinose; in frontal angle of view almost entirely pollinose, with a pair of dark vittae scarcely to rather distinctly visible between rows of *dc* and *acr*, the vittae reaching to 2nd *post-dc*; in caudal angle of view with some dark markings discernible: a rather broad and sharp median vitta expanding beyond rows of *acr*, rather narrow or moderate and obscure paramedian vittae along rows of *dc*, and broad and obscure lateral patches on postsutural lateral declivities, the median and paramedian vittae joined together on posterior half of postsutural scutum. Abdomen with median vitta much broadened, well maintained caudad and about one-third as wide as the abdomen on 2nd and 3rd tergites, and triangulate on 4th and 5th tergites, and with fore-marginal bands discernible on 2nd and 3rd tergites; these markings rather obscurely margined especially on 4th and 5th tergites. Wings slightly tinged with dark brown; calyptrae whitish and a little tinged with brown; halteres dark brown or blackish brown at base and yellowish at knob.

Head (good-conditioned in holotype, shrunk in paratypes) about 1.2 times as high as long; frons a little wider than anterior ocellus; interfrontalia linear caudad, with *if* well developed, about as long as longest pedicellar seta; *ors* absent; 5-7 *ori* (not uniform in length), mingled with 1 or a few minute setulae; A_3 about 1.3 times as long as wide; arista distinctly pubescent, although longest hairs shorter than basal diameter of arista; orbits about as wide as A_3; cheeks about two-thirds as high as A_3-width, and about one-tenth of eye-height, with some rather long genal setae in 1 or 2 rows; face distinctly concave just above epistoma, though the latter situated a little behind frons at lunule; palpi about as long as A_2 and A_3 combined; haustellar mentum lengthened, about 1.5 times as long as palpi; occiput with postocular series



Figs. 7-11. *Botanophila kitadakeana* sp. nov., ♂. 7, 5th sternite; 8, hypopygium, dorsal view; 9, ditto, lateral view; 10, basiphallus and distiphallus; 11, pregonite and postgonite. Holotype from Mt. Kitadake.

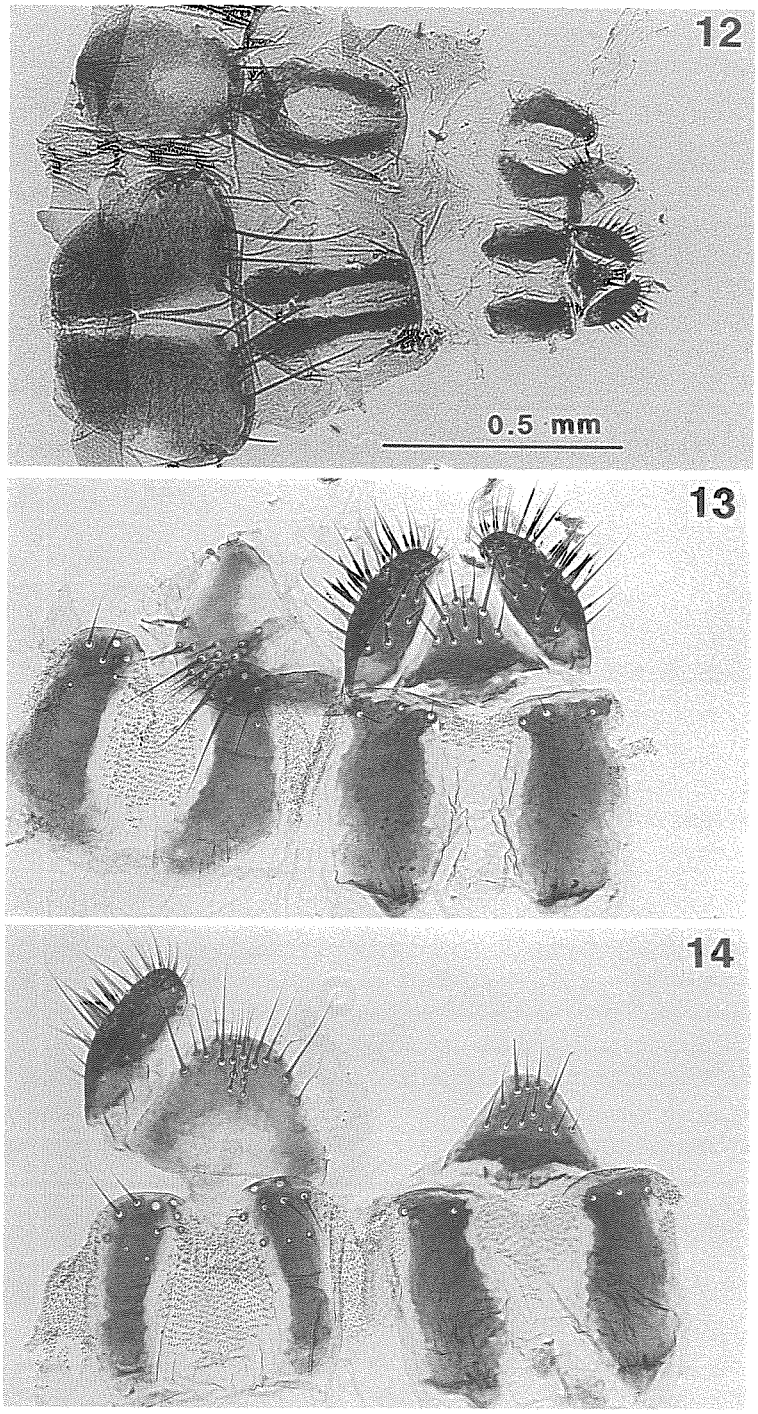
composed of long setulae; postocular disks setulose.

Mesonotum with 3 pairs of *pre-acr* in 2 rows, which are scarcely or slightly closer to each other than to *dc*-rows at the 1st pair and become much closer caudad; in the specimens at hand only a single setula discernible between the rows of *pre-acr*; posterior *ph* indistinguishable from ground setulae; *pra* rather well developed, and slightly to distinctly shorter than posterior *ntpl*; mesopleuron with a weakly or rather distinctly developed anterior *mpl*, and with 1 strong and 1 weak *pstg* and 1-5 associated setulae; *stpl* 1 : 2, the lower posterior distinctly weaker than the upper; scutellum with no ground setulae dorsally.

Abdomen depressed and more or less ovoid, 1.5-1.7 times as long as wide; 6th tergite with no setulae; terminalia as in Figs. 7-11; pregonites with 2 much enlarged and triangular setae; postgonites with no distinct setae or setulae discernible.

Mid femur with a row of weak *av*, and on basal half with 4-7 rather strong *pv*; f_3 with 5 (4 on right leg in holotype) strong *av* on distal half and with 0-1 rather weak *pv* near middle; t_1 with 1 *ad* and 1 *pv*, the *ad* minute and only a little stronger than adjacent setulae; t_2 with 1 *ad*, 2 *pd* and 2-3 *p/pv*, and without *av* ; t_3 with 2-3 *av*, 4-5 *ad*, 3 (4 on left leg in holotype) *pd* and 1 or a few *pv*, and with apical *pd* small. Wings with costal thorns small, though distinctly stronger than costal spicules; costa bare ventrally; *dm-cu* nearly straight and hardly oblique.

♀. Wing-length 3.2-3.6 mm. Body with pollinosity denser and more brownish than in male. Interfrontalia brownish on lower area and dark brownish or blackish on the upper in ground colour; orbits with pollinosity less shining than in male; antennae very faintly brownish on basal two segments in part. Mesonotum with no



Figs. 12-14. *Botanophila kitadakeana* sp. nov., ♀. 12, ovipositor; 13-14, ditto, 8th segment and proctiger. Paratypes from Mt. Kitadake.

vittae visible in frontal view; in caudal view with dark markings more opaquely discernible than in male.

Frons 0.37–0.4 times as wide as head; interfrontalia about half as wide as frons; 2 strong and 2 weak *ori*, mingled with 1 or a few minute setulae; 3 *ors*; epistoma situated slightly behind to slightly beyond frons at lunule. Mesonotum with 2–4 setulae visible between rows of *pre-acr*; 1 long *pstg* and usually 2 associated setulae; lower posterior *stpl* much weakened and only a little stronger than adjacent setulae. Ovipositor as in Figs. 12–14.

Mid femur with *av* weaker than in male and practically absent except for a few ones near middle, and with 1 *pv* near base and 0–1 *pv* near basal fourth, these *pv* also weaker than in male; f_3 with 4–5 (3 on right leg in 1 specimen) *av* on distal half; t_1 with 1 *ad* and 1 *pv*, the *ad* much stronger than the *pv*; t_2, as in male, without *av*; t_3 with 2–3 *av*, 3–4 *ad*, 3 *pd* and no *pv*.

Remarks. This species is very closely related to the Danish *B. herviana* Michelsen, 1983, from which it is distinguished by the following aspects in the genital structures: in the male, cercal plate without a process at middle of posterior concavity; surstyli not constricted medially in profile and hardly concave apically; pregonites with setae concave on distal margin; postgonites without a distinct seta at posteroventral corner; in the female, each plate of 7th tergite more broadly maintained caudad; supra-anal sclerite broadly setulose. It might be open for further discussion that the differences mentioned above are enough to recognize *kitadakeana* as distinct from *herviana* or merely indicate a subspecific relation between them.

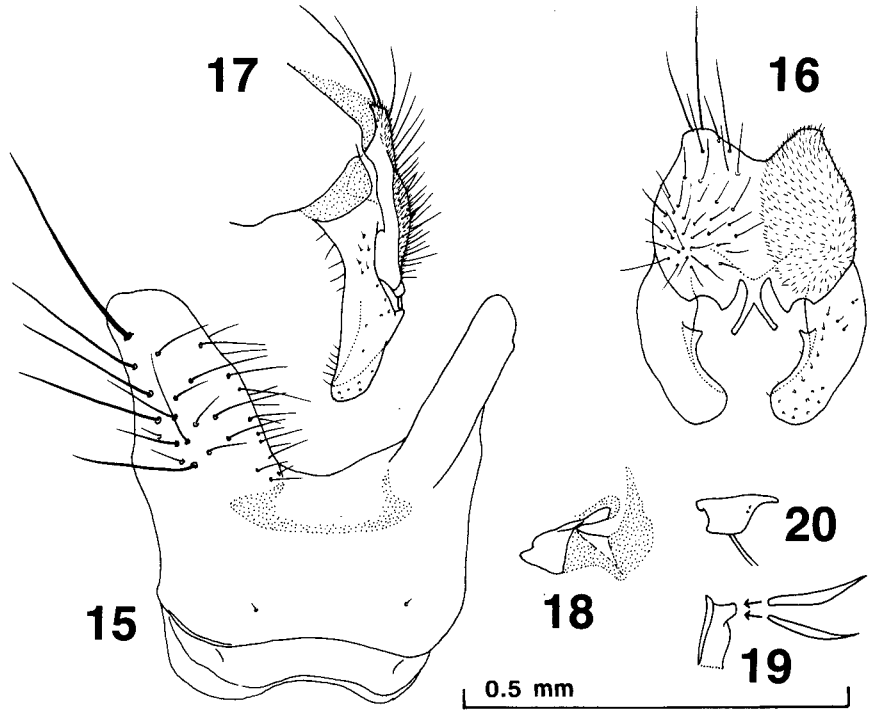
3. *Botanophila rotundivalva* (Ringdahl, 1937)
(Figs. 15–20)

Pegohylemyia rotundivalva: Hennig, 1970: 403.
Botanophila rotundivalva: Dely-Draskovits, 1993: 29.

Material examined. Honshu. Toyama-ken: Yukikura-dake, alt. 2400–2600 m, Mt. Shirouma-dake, 1♂, 21. vii. 1989. Toyama-ken/Niigata-ken: Asahi-dake, alt. 2000–2400 m, Mt. Shirouma-dake, 1♂ (teneral and shrunk), 21–22. vii. 1989.

Distribution. Sweden; Finland; Japan. New to Japan.

♂. Wing-length 5.1–5.2 mm. Body and appendages black in ground colour (brownish on interfrontalia, orbits and cheeks in the specimen from Asahi-dake), and rather densely pale brownish grey pollinose, darker on mesonotum. Interfrontalia whitish grey in pollinosity, darkened on upper area; orbits with silvery reflection in pollinosity; haustellar mentum distinctly pollinose. Mesonotum in frontal view with pollinosity rather weakly discernible and with a rather broad and distinct median vitta between rows of *acr*, narrower and obscure paramedian vittae along rows of *dc*, and obscure lateral patches; in caudal view with pollinosity well discernible and with a rather broad median vitta and lateral patches distinctly visible though not sharply margined, yet with paramedian vittae hardly discernible. Abdomen with median vitta narrow or moderate and sharp; fore-marginal bands entire on 2nd and 3rd tergites, restricted on median third on 4th tergite, and practically absent on the 5th. Wings distinctly tinged with brown, yellowish basally; calyptrae tinged with yellow.



Figs. 15-20. *Botanophila rotundivalva*, ♂. 15, 5th sternite; 16, hypopygium, dorsal view; 17, ditto, lateral view; 18, basiphallus and distiphallus; 19, pregonite; 20, postgonite. Yukikura-dake (15-17) and Asahi-dake (18-20).

Head 1.4 times as high as long; frons slightly wider than anterior ocellus; interfrontalia two-thirds as wide as anterior ocellus, with *if* about as long as ocellar setae, and below the *if* with some weak setulae visible; about 6 strong and some (4-6) weak *ori*, associated with 1 or 2 minute setulae; no *ors*; A_3 1.8-1.9 times as long as wide; arista with longest hairs as long as basal diameter of arista; orbits about as wide as A_3; cheeks about as high as orbital width, and 0.15 times as high as eye, with genal setae in 2 rows; epistoma situated slightly behind frons at lunule; palpi as long as or a little shorter than A_2 and A_3 combined; haustellar mentum not particularly lengthened, probably about as long as A_2 and A_3 combined; occiput setulose on postocular disks.

Mesonotum rather densely setulose laterally; 3 pairs of distinct *pre-acr*, the rows separated from each other at the 1st pair by a distance slightly longer than that to adjacent *dc*-row and parallel to each other or slightly divergent caudad; a few fine setulae present along each row of *pre-acr*, and about 10 setulae arranged in about 2 rows present between the rows of *pre-acr*; posterior *ph* hardly distinguishable from adjacent setulae; *pra* shorter than posterior *ntpl*; no setulae on notopleuron (1 setula present on right notopleuron in the specimen from Yukikura-dake); mesopleuron with a long and distinct anterior *mpl*, and with 2 ordinary *pstg* and 8-9 associated setulae; *stpl* 1 : 2, below the posteriors with 1 fine or weak seta distinguished from adjacent setulae; scutellum with some setulae on dorsum laterally.

Abdomen depressed and ovoid, about 1.5 times as long as wide; 6th tergite bare; terminalia as in Figs. 15-20.

Mid femur on basal half with some (3-5) short *av* and some (4-5) long *pv*, and just above the *pv* with some weaker setae discernible; f_3 with a complete row of about 8 *av* and with 3-4 *pv* on basal half or two-thirds, the *pv* near base being weaker; t_1 with 1 (2 on right leg in 1 specimen) *pv*, and no *ad*; t_2 with 1 *ad*, 2 *pd* and 2 *pv*; t_3 with 1-2 *av*, 4-6 *ad*, 3-4 *pd* and 3-6 *pv*, and with apical *pd* small. Wings with costal thorns a little developed and distinctly stronger than costal spicules; costa hardly setulose ventrally, only some setulae discernible near lower row of costal spicules; *dm-cu* nearly straight or slightly sinuate, and hardly or slightly oblique.

♀. Unknown.

Remarks. According to Hennig (1970), *B. rotundivalva* is described as "Rüssel schlank und verlängert, ... f_2 in der Proximalhälfte mit 4-5 verlängerten av und pv." In the present specimens, the proboscis is not particularly lengthened and all the *av* on the mid femur are shorter than the femur-height. Moreover, the surstyli of *rotundivalva* figured by Hennig (l. c.) are distinctly narrower than those of the Japanese material in profile. It is, therefore, tentative that the present Japanese form is referred to *B. rotundivalva*.

4. *Botanophila betarum* (Lintner, 1883)

Pegohylemyia macra Karl, 1940: 44; Hennig, 1970: 385; Suwa, 1974: 119. Synonymy after Steyskal (1980).

Hylemya (*Pegohylemyia*) *betarum*: Steyskal, 1980: 553.

Pegohylemyia betarum: Fan et al., 1988: 261.

Botanophila betarum: Dely-Draskovits, 1993: 24.

Material examined. Honshu. Toyama-ken: Yukikura-dake, alt. 2400-2600 m, Mt. Shirouma-dake, 1♂, 21. vii. 1989.

Distribution. Holarctic region.

Remarks. This species was recorded from Japan under the name *Pegohylemyia macra* on the basis of a single male specimen collected at Mt. Hodaka, Nagano-ken, central Honshu. On this occasion, another record is added. The species is widely distributed in the Holarctic region.

5. *Botanophila fugax* (Meigen, 1826)

Pegohylemyia fugax: Hennig, 1970: 369; Fan et al., 1988: 262.

Hylemya (*Pegohylemyia*) *fugax*: Steyskal, 1980: 553.

Botanophila fugax: Suwa, 1986: 43; Dely-Draskovits, 1993: 25.

Material examined. Hokkaido. Sapporo, 7♂, 7♀, 5. vii. 1995, 2♂, 4♀, 22-25. ix. 1995, 11♂, 13♀, 24. vii. 1996. Honshu. Toyama-ken: Yukikura-dake, alt. 2400-2600 m, Mt. Shirouma-dake, 3♂, 21. vii. 1989.

Distribution. Holarctic region.

Remarks. In Japan, this species has been known only from Mt. Shokambetsu, Hokkaido. Additional records are given as above.

6. *Botanophila hucketti* (Ringdahl, 1935)

Pegohylemyia hucketti: Suwa, 1974: 118; Fan et al., 1988: 261.
Botanophila hucketti: Dely-Draskovits, 1993: 26.

Material examined. Honshu. Gifu-ken: Kagamidaira - Yumiori-dake, alt. 2300-2500 m, 2♂, 15. vii. 1989.

Distribution. Holarctic region.

Remarks. This species has been known in Japan from a record of 2 male specimens collected at Mt. Hodaka, Nagano-ken. Another record is given here.

7. *Botanophila dissecta* (Meigen, 1826)

Botanophila dissecta: Suwa, 1986: 44.
Pegohylemyia dissecta: Fan et al., 1988: 257.

Material examined. Hokkaido. Shiribeshi-shicho: Yaenishibe, Kozawa, Kyowa-cho, 1♂, 20. v. 1995.

Distribution. Europe; China; Japan.

Remarks. This species was recorded from Japan on the basis of a single male specimen collected at Masutomi, Yamanashi-ken. An additional record is here given from Hokkaido.

8. *Botanophila lobata* (Collin, 1967)

Botanophila lobata: Suwa, 1986: 46.

Material examined. Honshu. Tochigi-ken: Mt. Shakagatake, alt. 1500-1800 m, 1♂, 29. v. 1991.

Distribution. Europe (England); NE China; Korea; Japan.

Remarks. This species may be widely distributed in the Palaearctic region. In Japan, it has been known only from Masutomi, Yamanashi-ken. Another locality of the species is given as above.

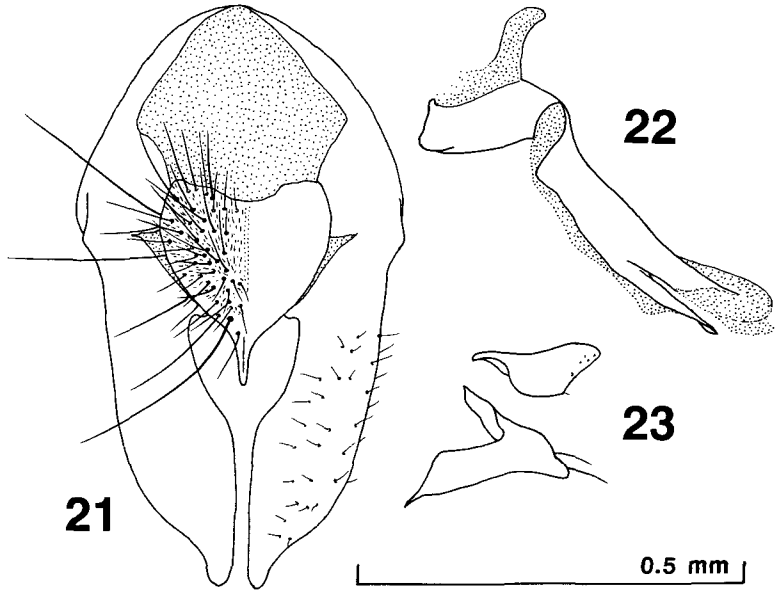
9. *Delia dovreensis* Ringdahl, 1954
(Figs. 21-23)

Delia dovreensis: Hennig, 1974: 794; Griffiths, 1991: 1100.

Material examined. Honshu. Yamanashi-ken: Mt. Kitadake, alt. 2800-3190 m, 1♂, 1♀, 5-7. vii. 1989.

Distribution. Norway; Mongolia; Japan; N. America. New to Japan.

♂. Wing-length 5.2 mm. Body including appendages black in ground colour, slightly brownish on palpi basally and on haustellar mentum, and in pollinosity dense and pale grey in main areas. Interfrontalia thinly whitish grey pollinose; orbits and cheeks densely pale grey pollinose, very faintly tinged with brown, and weakly shining; haustellar mentum rather thinly pollinose. Mesonotum in frontal angle of view with pollinosity entirely visible, tinged with brown medially and laterally; in caudal angle of view with a rather distinct black median vitta and obscure black lateral patches discernible. Abdomen slightly tinged with brown in pollinosity, with



Figs. 21-23. *Delia dovreensis*, ♂. 21, hypopygium, dorsal view; 22, basiphallus and distiphallus; 23, pregonite and postgonite. Mt. Kitadake.

sharp and rather narrow median vitta; fore-marginal bands discernible on 2nd tergite entirely and on 3rd medially. Wings tinged with brown, darker basally; calyptrae tinged with yellow; halteres tawny yellow at knob.

Head about 1.2 times as high as long; eyes comparatively small; frons a little wider than distance between posterior ocelli inclusive; interfrontalia about two-thirds as wide as frons, with *if* distinct, about half as long as ocellar setae; 5-7 *ori*, mingled with some minute setulae; no *ors* (in the present specimen 1 minute setula visible a little below the middle between anterior ocellus and uppermost *ori* on right parafrontal); A_3 nearly twice as long as wide; arista with longest hairs about as long as basal diameter of arista; orbits broad, about twice as wide as A_3, and only a little narrowing ventrad; cheeks higher than orbital width, about 0.4 times as high as eye, with 3-4 well developed genal setae in a row (1 seta being out of the row on left cheek); epistoma situated a little behind frons at lunule; occiput with some setulae on each postocular disk.

Mesonotum with 3 pairs of *pre-acr* in closely approximated rows and with no setulae in between, distance between the rows about half as long as that to adjacent *dc*-row; posterior *ph* weak though distinguishable from adjacent setulae; *pra* strong, a little longer than posterior *ntpl*; 1 accessory setula visible on left notopleuron and no ones on the right in the present specimen; mesopleuron without a differentiated anterior *mpl*, and with 2 ordinary *pstg* and no or 2 associated setulae; *stpl* 1 : 2; scutellum with some setulae on dorsal surface laterally.

Abdomen half-depressed basally, widest at hind margin of first tergite, narrowing caudad, and about 2.7 times as long as wide; terminalia as in Figs. 21-23.

Mid femur with a row of about 10 short *av* on basal half, some basal *av* and the distalmost *av* being more distinct than the others, and with 7-8 long and strong *pv*

on basal half or slightly more; f_3 with a row of 10 *av* (a few near base shorter than the femur-height), near apex with 1-2 long *pv*, and on basal half with about 8 short *pv* more or less differentiated from adjacent setulae; t_1 with 2 fine *ad* barely discernible on left leg, and no *ad* discernible on the right, with 1 long *pv*, and with apical *pv* much shorter than apical *d* though distinct; t_2 with 0-1 *ad*, 1 strong and 2-3 additional *pd* and 2-4 *p/pv*, and with no *av*; t_3 with 5 *av*, 5-6 *ad*, 5 *pd* and 4-6 *pv*. Wings with costal thorns rather strong, about as long as *h*-vein; costa with some setulae discernible on ventral surface near lower row of spicules before costal break; costal spicules rather well developed; *dm-cu* oblique and nearly straight.

♀. Wing-length 6 mm. Body with pollinosity denser and a little more brownish than in male. Head 1.12 times as high as long; frons 0.46 times as wide as head; interfrontalia about half as wide as frons; 3 strong and 1-2 weak *ori*; 3 *ors*; orbits about 2.5 times as wide as A_3; cheeks about half (0.55 times) as high as eye. Mesonotum with ground setulae finer and sparser than in male; *acr* all fine, the prescutellar pair being also fine though longer than the others; *pra* about as long as anterior *ntpl*; *stpl* 1 : 2 as in male. Abdomen with cerci long and setulose, not spinose.

Mid femur with no distinct *av* and with some short *pv* on basal half; f_3 with 5 strong *av* except near base, and with no *pv* except for a weak basal one (more or less ventral) and a rather strong preapical one; t_1 with 1 strong and 0-1 weak *ad* and 1 strong *pv*; t_2 with 1 *av*, 2 *ad*, 2 *pd* and 2 *pv*; t_3 with 3 *av*, 4 *ad*, 5-6 *pd* and 3-4 weak *pv*. Wings with costal thorns well developed and much longer than *h*-vein; *dm-cu* less oblique than in male though slightly sinuate.

Remarks. The Japanese form slightly differs from the European and the North American one in the mesonotum with fewer *pre-acr* and with no accessory setulae between the rows of *acr*. In other characters no significant differences are found.

10. *Delia fabricii* (Holmgren, 1872)

Delia fabricii: Suwa, 1977: 10; Griffiths, 1992: 1309

Material examined. Honshu. Nagano-ken: Mt. Shirouma-dake, alt. 2700-2900 m, 1♂, 20. vii. 1989.

Distribution. Holarctic region.

Remarks. This species has been known to occur in Japan on the basis of a single male specimen collected at Mt. Kiso-komagatake, Nagano-ken. An additional record is given here.

11. *Alliopsis conifrons* (Zetterstedt, 1845)

Alliopsis conifrons: Griffiths, 1987: 870.

Material examined. Honshu. Nagano-ken: Konashidaira, 1500 m, Azumi-mura, 1♂, 31. vii. 1989 (S. Shinonaga).

Distribution. Holarctic region. New to Japan.

Remarks. The specimen at hand is heavily damaged on the head, but in most characters observed including the terminalia it is not significantly different from the redescription of *conifrons* given by Griffiths (1987) and may be referred to the

species.

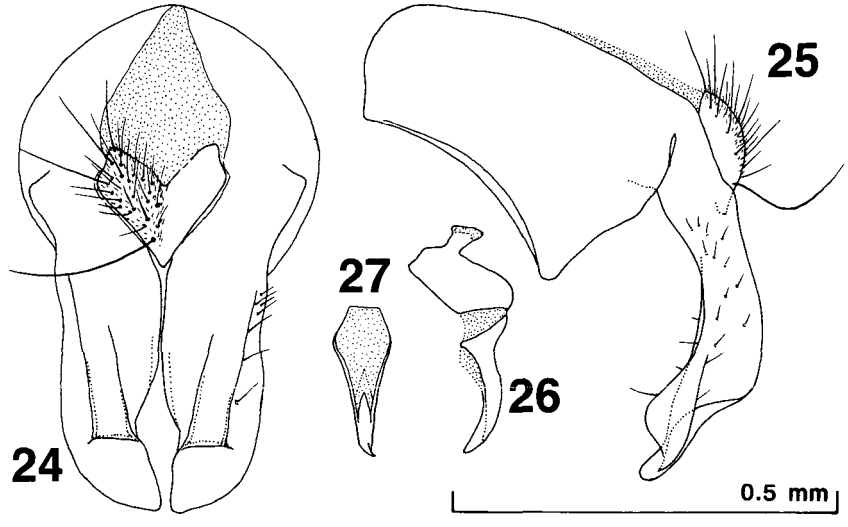
12. *Heterostylodes pilifera* (Zetterstedt, 1845)
(Figs. 24-27)

Heterostylodes pilifera: Fan et al., 1988: 122; Griffiths, 1996: 1783.

Material examined. Honshu. Nagano-ken: Hakuba-ôike - Korengeyama, alt. 2400-2700 m, Mt. Shirouma-dake, 1♀, 20. vii. 1989. Toyama-ken: Yukikura-dake, alt. 2400-2600 m, Mt. Shirouma-dake, 1♂, 21. vii. 1989. Toyama-ken/Niigata-ken: Asahi-dake, alt. 2000-2400 m, Mt. Shirouma-dake, 1♂, 21-22. vii. 1989.

Distribution. Holarctic region. New to Japan.

Remarks. This is the first record of the genus from Japan. Although the specimens examined are shrunk on their heads, they agree well with the redescription of *pilifera* given by Griffiths (1996) except for some slight differences as follows: orbits 1.1-1.2 times as wide as A_3 in male (uncertain due to shrinkage in female); notopleuron with 1-2 accessory setulae and *pra* as long as or a little longer than anterior *ntpl* in both sexes; t_3 in male with 2-4 *av*, 5 *ad*, 5 *pd* and 2-5 *pv*.



Figs. 24-27. *Heterostylodes pilifera*, ♂. 24, hypopygium, dorsal view; 25, ditto, lateral view; 26, basiphallus and distiphallus; 27, distiphallus, ventral view. Asahi-dake.

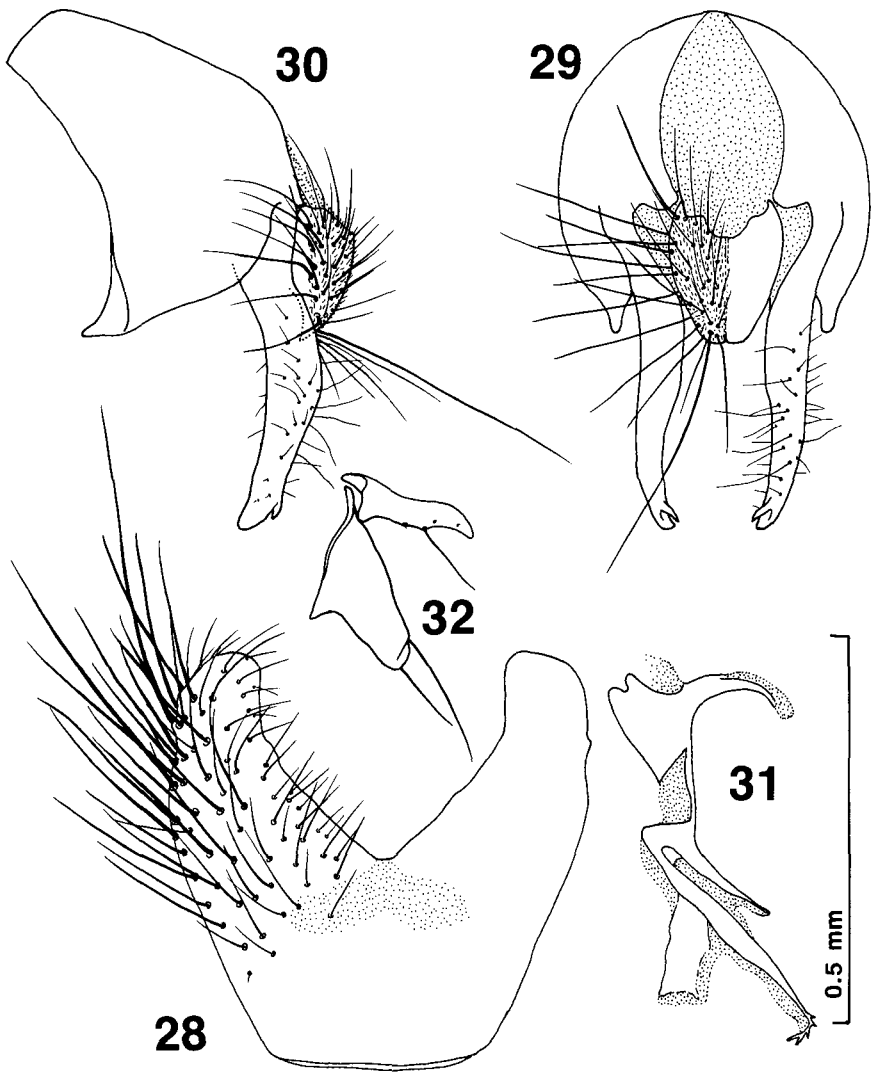
13. *Paregle atrisquama* (Ringdahl, 1948)
(Figs. 28-32)

Paregle atrisquama: Hennig, 1976: 940.

Material examined. Honshu. Nagano-ken: Hakuba-ôike - Korengeyama, alt. 2400-2700 m, Mt. Shirouma-dake, 1♂, 20. vii. 1989; Mt. Shirouma-dake, alt. 2700-2900 m, 7♂, 20. vii. 1989.

Distribution. Europe (Austrian Alps); Japan. New to Japan.

♂. Wing-length 3.8-4.4 mm (3.2 mm in the smallest specimen). Rather hairy species. Body blackish in ground colour and brown to brownish grey in pollinosity; appendages dark brown to blackish. Head on main frontal areas whitish grey pollinose; face and upper part of parafrontals brownish grey pollinose. Mesonotum thinly pollinose; in frontal view almost entirely blackish; in caudal view with pollinosity discernible between rows of *dc* and *acr* before suture and narrowly discernible along scutellum and caudal half of each posterior callus. Abdomen rather densely brownish grey pollinose, sometimes a little bluish in the pollinosity; median vitta sharp, broader than femur-height on 2nd tergite, and narrowing caudad; fore-



Figs. 28-32. *Paregle atrisquama*, ♂. 28, 5th sternite; 29, hypopygium, dorsal view; 30, ditto, lateral view; 31, basiphallus and distiphallus; 32, pregonite and postgonite. Mt. Shirouma-dake.

marginal bands rather narrow and complete on 2nd to 5th tergites; 5th sternite polished along inner margins of processes. Wings distinctly tinged with dark brown, much darker basally; calyptrae tinged with dark brown; halteres yellowish at knob.

Head 1.15-1.3 times as high as long; frons narrower than anterior ocellus; interfrontalia with a pair of distinct *if*; parafrontals contiguous to each other or nearly so; about 10 (8-11) *ori* and 1 rather well developed *ors* (2 *ors* on right parafrontal in 1 specimen); A_3 1.6-1.8 times as long as wide; arista with longest hairs a little shorter than basal diameter of arista; orbits as wide as or a little wider than A_3; cheeks about as high as orbital width, and 0.16-0.2 times as high as eye, with genal setae in about 2 rows; epistoma distinctly protruded beyond frons at lunule; palpi as long as to a little longer than A_2 and A_3 combined; haustellar mentum much longer than palpi; occiput setulose on postocular disks.

Mesonotum with 3-5 pairs of *pre-acr* in widely separated rows and with some (7-11, occasionally 3-5) accessory setulae in between, setae of the 2nd or 3rd pair being rather strong and the others fine; anterior *ph* associated with a rather distinct seta before itself; posterior *ph* not differentiated from ground setulae; *pra* a little shorter than adjacent ground setulae, but stout and easily distinguishable from the latter; mesopleuron with no differentiated anterior *mpl*, and with 1 ordinary *pstg* and many (10-17) associated setulae; *stpl* 1 : 2; scutellum on dorsal surface with some setulae laterally and bare medially.

Abdomen depressed and ovoid, about 1.5 times as long as wide; terminalia as in Figs. 28-32; 5th sternite with processes more or less directed inward apically; cercal plate blunt apically; distiphallus with paraphalli curved downward apically.

Mid femur near base with some short *av* usually differentiated from adjacent setulae, on basal half with some (6-8) strong *pv*, most of which are much longer than the femur-height, and just above the row of *pv* with some (4-10) weaker *pv* discernible in 1-2 rows; f_3 with a complete row of about 10 (8-12) *av*, on basal half with a row of some (5-8) *pv*, which are shorter than most *av* though strong or distinct, and just above the row of *pv* with some setae usually developed though much finer than the ordinary *pv*; t_1 with 1 *ad* and 1 (2 on right leg in 1 specimen) *pv*; t_2 with 0-1 *av*/*v*, 1 *ad*, 2 (rarely 1 or 3) *pd* and 2 (sometimes 1) *pv*; t_3 with 1 *av*, 5-7 *ad*, 3 (sometimes 2, rarely 4) *pd* and no *pv*. Wings with costal thorns small though differentiated from costal spicules; costa bare ventrally; *dm-cu* barely or slightly sinuate and a little oblique.

♀. Unknown.

Remarks. This species was originally described on the basis of a single male specimen from the Austrian Alps and no other records have been added. In his redescription of *atrisquama*, Hennig (1976) gives a mention on the *pra* as follows: "Eine von der auch an dieser Stelle dichten und langen Grundbehaarung verschiedene pra ist nicht erkennen." On the other hand, in the Japanese specimens, the *pra* is stout and easily distinguished from adjacent ground setulae though a little shorter than the latter. Any other significant differences are not found between the European and the Japanese form, and the latter should be identified with *atrisquama*.

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